

IN THE CLAIMS

1. (Currently amended) A cathode active material for a lithium secondary cell comprising:

a first lithium[[-]] transition metal oxide capable of lithium ion intercalation/ deintercalation, and

~~characterized by further comprising a second lithium manganese transition metal oxide capable of lithium ion intercalation/ deintercalation, the second lithium transition metal oxide having a higher irreversible capacity than the lithium transition metal oxide and having a layered structure, and represented by the following formula 1 as an additive:~~

[formula 1]



wherein, x is a number satisfying $0.05 \leq x < 0.5$, and M is at least one metal selected from the group consisting of Cr, Al, Mn and Co,

the second lithium transition metal oxide undergoes a structural change on the first charge from a layered material to a material having a spinel structure, and

the second lithium transition metal oxide has an irreversible capacity of 0.5 mole of lithium per two oxygen atoms on the first charge.

2. (Currently Amended) The cathode active material according to claim 1, wherein the content of the second lithium transition metal ~~manganese~~ oxide ~~having a higher irreversible capacity than the lithium transition metal oxide and having a layered structure~~ is 1 to 50 parts by weight, based on 100 parts by weight of the first lithium ~~transition metal~~ oxide.

3. (Currently Amended) The cathode active material according to claim 1, wherein the second lithium transition metal ~~manganese~~ oxide ~~having a higher irreversible capacity than the lithium transition metal oxide and having a layered structure~~ is $\text{LiCr}_{0.1}\text{Mn}_{0.9}\text{O}_2$.

4. (Currently Amended) The cathode active material according to claim 1, wherein the first lithium transition metal oxide is at least one material selected from the group consisting of:

LiCoO_2 , LiNiO_2 , LiMnO_2 , LiMn_2O_4 , $\text{Li}(\text{Ni}_a\text{Co}_b\text{Mn}_c)\text{O}_2$, $\text{LiNi}_{1-d}\text{Co}_d\text{O}_2$, $\text{LiCo}_{1-d}\text{Mn}_d\text{O}_2$, $\text{LiNi}_{1-d}\text{Mn}_d\text{O}_2$, $\text{Li}(\text{Ni}_x\text{Co}_y\text{Mn}_z)\text{O}_4$, $\text{LiMn}_{2-n}\text{Ni}_n\text{O}_4$, $\text{LiMn}_{2-n}\text{Co}_n\text{O}_4$, LiCoPO_4 and LiFePO_4 , wherein $0 < a < 1$, $0 < b < 1$, $0 < c < 1$, $a + b + c = 1$, $0 \leq d < 1$, $0 < x < 2$, $0 < y < 2$, $0 < z < 2$, $x + y + z = 2$, and $0 < n < 2$.

5. (Currently Amended) A lithium secondary cell comprising a cathode, an anode, a separator, and a non-aqueous electrolyte solution containing a lithium salt and an electrolyte compound, wherein the cathode comprises a cathode active material comprising

a first lithium[[-]] transition metal oxide capable of lithium ion intercalation/deintercalation, and

a second ~~lithium manganese transition metal oxide having a higher irreversible capacity than the lithium transition metal oxide capable of lithium ion intercalation/deintercalation, the second lithium transition metal oxide and~~ having a layered structure, and represented by the following formula 1 as an additive:

[formula 1]



wherein, x is a number satisfying $0.05 \leq x < 0.5$, and M is at least one metal selected from the group consisting of Cr, Al, Mn and Co,

the second lithium transition metal oxide undergoes a structural change on the first charge from a layered material to a material having a spinel structure, and

the second lithium transition metal oxide has an irreversible capacity of 0.5 mole of lithium on the first charge.

6. (Currently Amended) The lithium secondary cell according to claim 5, wherein the second lithium manganese-transition metal oxide having a higher irreversible capacity than the lithium-transition metal oxide and having a layered structure represented by the following formula 1, which is contained in the cathode active material, is changed into a lithium manganese oxide having a spinel structure represented by the following formula 2 by on the first charge/discharge cycle of the lithium secondary cell:

[formula 1]



[formula 2]



wherein, x is a number satisfying $0.05 \leq x < 0.5$, and M is at least one metal selected from the group consisting of Cr, Al, Mn and Co.

7. (Original) The lithium secondary cell according to claim 5, wherein the lithium salt is at least one selected from the group consisting of LiClO_4 , LiCF_3SO_3 , LiPF_6 , LiBF_4 , LiAsF_6 and $\text{LiN}(\text{CF}_3\text{SO}_2)_2$, and the electrolyte compound is at least one carbonate selected from the group consisting of ethylene carbonate (EC), propylene carbonate (PC), gamma-butyrolactone (GBL), diethyl carbonate (DEC), dimethyl carbonate (DMC), ethylmethyl carbonate (EMC) and methylpropyl carbonate (MPC).

8. (Currently Amended) The lithium secondary cell according to claim 5, wherein the content of the second lithium manganese-transition metal oxide having a higher irreversible capacity than the lithium-transition metal oxide having a layered structure is 1 to 50 parts by weight, based on 100 parts by weight of the first lithium[[-]]-transition metal oxide.

9. (Currently Amended) The lithium secondary cell according to claim 5, wherein the second lithium manganese-transition metal oxide having a higher irreversible capacity than the lithium-transition metal oxide and having a layered structure is $\text{LiCr}_{0.1}\text{Mn}_{0.9}\text{O}_2$.

10. (Currently Amended) The lithium secondary cell according to claim 5, wherein the first lithium transition metal oxide is at least one material selected from the group consisting of:

LiCoO_2 , LiNiO_2 , LiMnO_2 , LiMn_2O_4 , $\text{Li}(\text{Ni}_a\text{Co}_b\text{Mn}_c)\text{O}_2$, $\text{LiNi}_{1-d}\text{Co}_d\text{O}_2$, $\text{LiCo}_{1-d}\text{Mn}_d\text{O}_2$, $\text{LiNi}_{1-d}\text{Mn}_d\text{O}_2$, $\text{Li}(\text{Ni}_x\text{Co}_y\text{Mn}_z)\text{O}_4$, $\text{LiMn}_{2-n}\text{Ni}_n\text{O}_4$, $\text{LiMn}_{2-n}\text{Co}_n\text{O}_4$, LiCoPO_4 and LiFePO_4 , wherein $0 < a < 1$, $0 < b < 1$, $0 < c < 1$, $a + b + c = 1$, $0 \leq d < 1$, $0 < x < 2$, $0 < y < 2$, $0 < z < 2$, $x + y + z = 2$, and $0 < n < 2$.